



TELECOMMUNICATIONS GROUP

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May 13, 1997

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Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Hand Delivered

RECEIVED

MAY 13 1997

Re: CC Docket No. 96-98,
Interconnection

Federal Communications Commission
Office of Secretary

Dear Mr. Caton:

This is to supplement the record in the above-captioned proceeding. Attached are articles and commercial information regarding the feasibility of utilizing high power line towers to offer wireless telecommunications services. WinStar is also actively pursuing the utilization of its services on high power line towers.

Kindly place this letter in the public file. Should you have any comments or questions, please do not hesitate to contact the undersigned.

Cordially yours,

Joseph M. Sandri, Jr.
AVP and Regulatory Counsel

Enclosure

cc: Meredith Jones
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Claire Blue
Nancy Stevenson

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UTC JOURNAL

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TRANSMISSION STRUCTURES PULL DOUBLE DUTY

Antenna sites are located on transmission structures where right-of-way is hard to find.

With increased opposition to new tower construction from residential communities, local building moratoriums were instituted in Baltimore, Maryland, US requiring a new solution to the problem of finding suitable radio transmission sites. About five years ago Baltimore Gas & Electric Co. (BGE) leased space on its microwave and radio towers to wireless carriers. This action simultaneously capitalized on BGE's existing communications infrastructure and satisfied an increased demand for tower space among new service providers in communications, who dealt in mobile radio, advanced paging and personal communications services.

At the end of 1994, American Personal Communications (APC), one of the new Personal Communications Services (PCS) providers in the Baltimore/Washington area, asked BGE about the feasibility of using its powerline transmission structures for antenna sites. Experiments in West Germany using such a scheme for cellular antennas encouraged BGE to agree to a test for a similar installation on its structures. APC selected a 115kV lattice tower at the intersection of two major highways in northern Baltimore County. The site was intended to evaluate signal and interference characteristics while providing APC with prime coverage for its initially-targeted mobile customers.

A BGE transmission engineering and con-

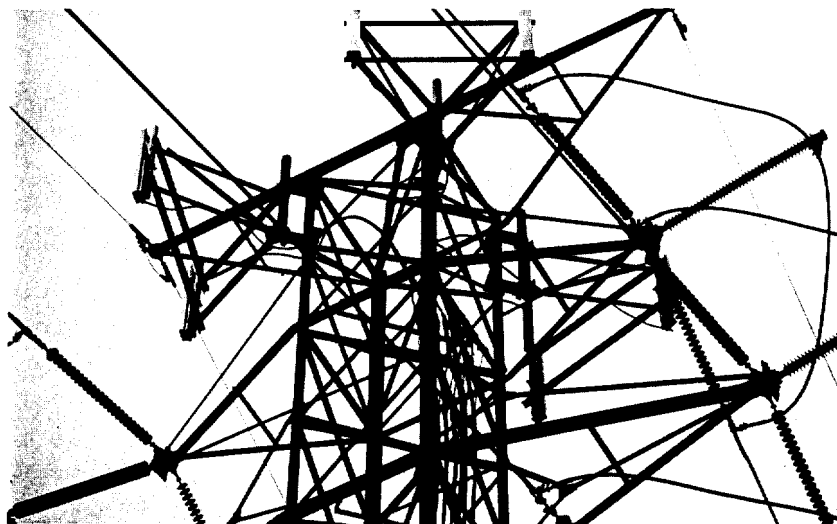


Fig. 1. APC installation with connection to existing ground grid.

struction team designed a unique antenna bracket to meet all of APC's design parameters while satisfying operational requirements involving system reliability, structural integrity and constructability. In early 1995, BGE crews installed the brackets, mounted APC's antennas and cables and tied the installation into BGE's existing ground grid (Fig. 1). A small equipment trailer was placed next to the tower's climbing leg and distribution crews brought a metered 200A, 120/240 commercial electric service to the site via a temporary wood-pole line, while the telecommunications department (TCD) coordinated Bell Atlantic's installation of the telco facilities.

THE TEST

In addition to the usual testing for RF coverage and optimization of its radio equipment, APC also conducted tests to study the effects of any corona generated on the overhead lines

and to study the effects of electric and magnetic fields on base-station equipment. Other factors examined included possible effects on RF propagation from protective relaying, signal distortion, cumulative effects of several power lines on signal strength, impact of tower bending or twisting on antenna patterns and the effect of any RF noise produced by the power lines on transceivers. Positive test results, obtained over a three-month period, indicated that the design would work and other structures were selected for additional antenna sites.

INSTALLATION DETAILS

An equipment platform was placed close to the tower's climbing leg to make installation and maintenance easier and to reduce the need for a lengthy ice bridge, which is a protective covering for cables. To eliminate the need for a building permit, a raised platform of wood, sized for future expansion, was used to support the self-contained radio cabinet, telecommunications cabinet, ac panel, electric meter and auxiliary equipment (Fig. 2).

The three antenna brackets, commercially available from TESCO of Sparks, Maryland, were assembled on the ground while a four-man crew installed three 4 1/2-inch (11.43 cm) diameter pipes to the tower legs or, in the case of a steel pole (Fig. 3), to pole bands to support the brackets. Next, using a specially engineered gin pole and pulley configuration, each bracket was hoisted to the top of the structure and then secured to the pivot pipe with U bolts (Fig. 4). Finally, the communications cables were connected to the antennas, secured every 5 to 10 ft. (1.5 to 3.1 m) down the structure and then fed into the PCS equipment via an ice bridge. In some cases, the communications cables were installed prior to the antenna

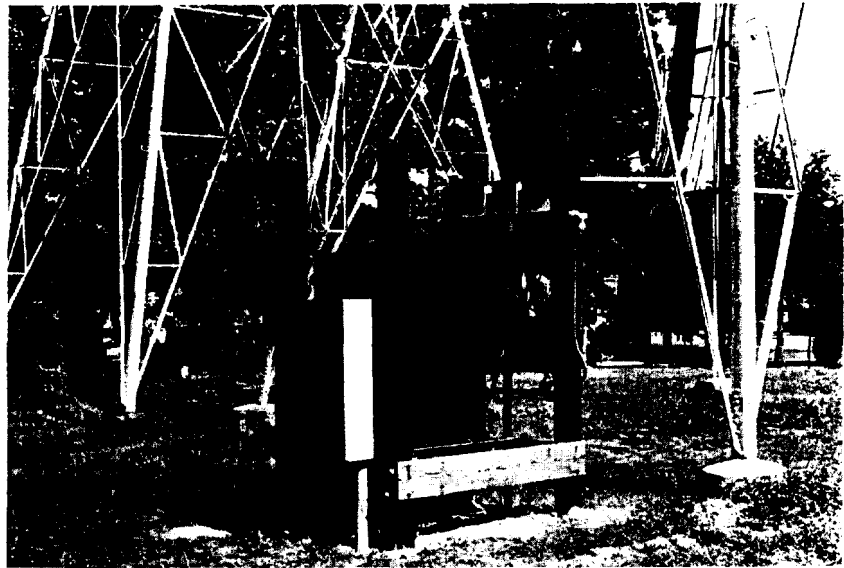


Fig. 2. Platform supporting telecommunication equipment and utility electric supply with metering.

brackets in order to meet deadlines for outage coordination.

Except for hoisting the antenna brackets to the top of the structure, all tower installation work was performed without an outage. APC was responsible for installing its own radio cabinet and ancillary equipment.

The last and often most challenging part of the installation was providing electric and telco services to each transmission structure. Generally, BGE would bring these services in from the nearest distribution point, using various underground methods. In addition to installing electric service, TCD coordinated with Bell Atlantic for telco facilities, often providing conduit or duct liner for Bell Atlantic's use. Permits from the state or other jurisdictions and R/W agreements from private landowners were often required to provide distribution facilities.

After county inspection had been completed and an inspection certificate had been received, distribution crews installed the electric meter and the site was ready for testing. In order to optimize coverage patterns, BGE made minor adjustments to antenna orientation. Since the azimuths were originally staked out on the ground at the base of the structure and then translated to its top, only minor changes were necessary and adjustments were

made without requiring an outage.

OPERATIONAL CONCERNS

When TCD first approached its operating departments about the project, operational concerns were voiced involving the potential effect on the reliability of BGE's transmission system, possible scheduled outages at the customer's demand, maintenance of clearances in accordance with NESC standards and the impact of the additional load on structural integrity. In addition, there were questions about possible restrictions on BGE from accessing the structures for maintenance or normal operations, on whether customer personnel would be permitted to climb the structure, on how often BGE would be required to maintain customer equipment at the top of the structure and whether safety would be compromised.

To answer these questions a structural analysis was made of a typical lattice tower and a steel pole to determine the effects of the antenna loads on the structures. Results showed that the extra load would not overstress any of the structures' members. Since only passive equipment would be installed at the top of a structure, frequent maintenance would not be required. It was agreed that each installation would be analyzed separately to ensure that BGE complied with all NESC standards and to guarantee maintenance of BGE's strict safety standards.

Only authorized BGE personnel would be permitted to climb the structure for installation and subsequent maintenance. In addition, BGE agreed to perform an annual inspection of the antennas and cables, making emergency repairs as needed. The antenna brackets would be designed to make sure that they would not interfere with utility operations and maintenance and a procedure was established to handle routine and emergency repairs. In all cases, the utility concerns would take precedence over customer emergencies.

Finally, a policy was established to install customer equipment above the conductors on 115 and 230kV structures and below the conductors on 500kV structures.

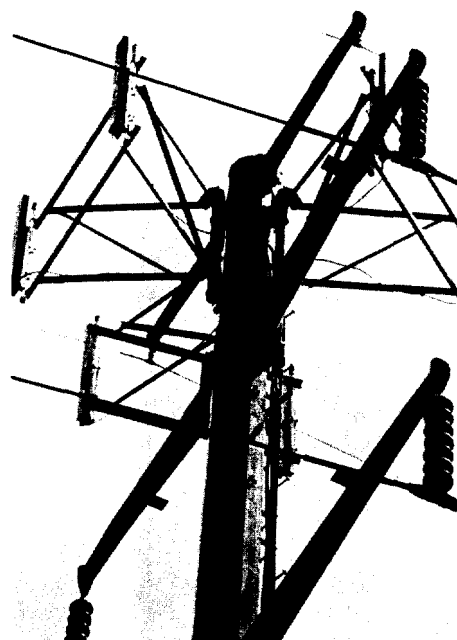


Fig. 3. Pipes installed for supporting antenna brackets.

OTHER CUSTOMER-RELATED ISSUES

When a transmission structure had been selected for use as an antenna site, the nearest distribution circuits were examined to select one which would minimize the need for road crossing permits and costly underground boring. Not only does this kind of examination reduce the electric utility's construction requirements, it also saves time and reduces customer costs. In addition, since not all transmission structures are located on property owned in fee but on restrictive easements, it is important to enlist the help of the real estate and legal departments to determine if rights already exist for installing equipment platforms and for bringing distribution lines across the property. Although it is simpler to select sites owned in fee, it is necessary to inform the regional telephone company if right-of-way is required from landowners.

Environmental concerns must be addressed to identify wetlands, for example, that may restrict placement of equipment, the selection of a structure or the route for distribution facilities to follow. Possible restrictions should be determined at the outset in order to save time and money. The environmental or permitting

department can aid in the analysis to determine the possible impact on the surrounding communities. For example, if a structure is situated along a major highway, remote from neighborhoods, then the antennas will not be noticed. However, if the tower is located close to houses, residents should be advised about the project before construction begins.

BGE has adopted the practice of painting the antennas to blend with the galvanized steel structure and often provides landscaping around the platform to shield it from view. Since transmission structures are controlled and regulated by the Maryland Public Service Commission (PCS), BGE did not have to obtain permits from local zoning agencies to install the antennas, and it did not have to solicit special permission from the PSC. Nevertheless, BGE's practice is to inform the PSC of its activities involving these installations.

CONCLUSIONS

The test site, demonstrating a feasible solution for APC, AT&T Wireless and other wireless carriers, has resulted in installations of



Fig. 4. Brackets secured to pivot pipe with U bolts.

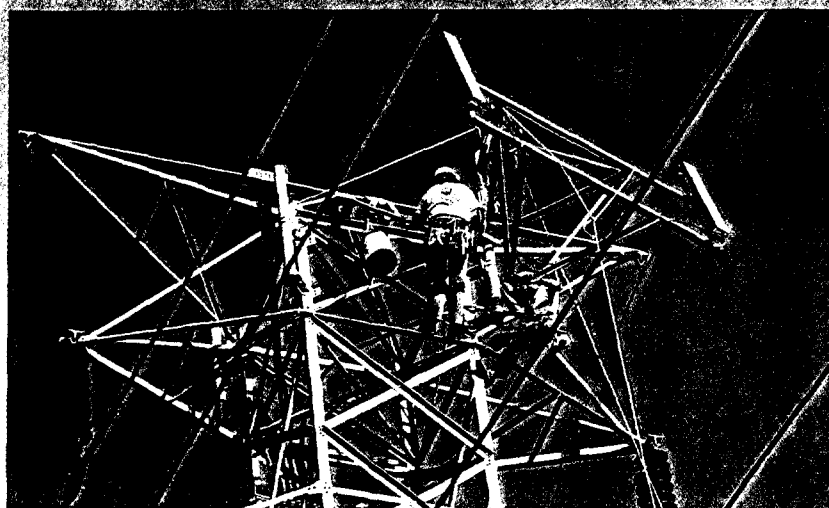
PCS antennas on 46 transmission structures and cellular antennas on three others. The use of existing structures on utility property for communication purposes has generated interest across the US among both the wireless and electric utility industries. Because of the existence of large numbers of transmission facilities, and the growing demand for antenna sites, BGE's experience shows that use of existing structures for these antenna installations can provide added rate-based revenues for electric utilities.○

by Carol Caballero, Baltimore Gas & Electric Co.

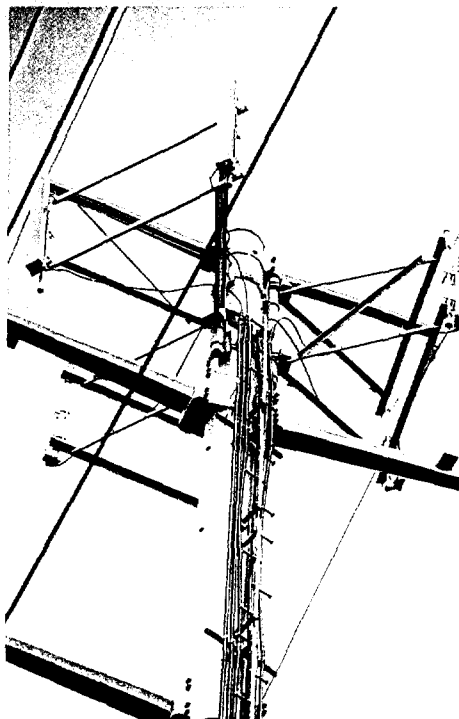
THE

POWER TOWER™

ANTENNA MOUNTING BRACKET FOR POWER TRANSMISSION TOWERS



- Designed and developed in conjunction with Baltimore Gas & Electric Company
- EPRI tested
- Mounts up to three antennas
- Fast and easy to install on angle leg towers or monopoles
- Currently in use in a variety of PCS, cellular, paging and SMR applications across the U.S.



The PowerTower is a unique new antenna mounting bracket that allows mounting of wireless communications antennas on virtually any existing power transmission structure. Jointly developed by TESSCO and Baltimore Gas & Electric Company, the PowerTower offers benefits for both electric utilities and wireless communications carriers.

Utilities will enjoy an easy-to-implement, on-going source of revenue generation through the rental of tower space.

Carriers can build or upgrade their systems while sidestepping potential zoning problems and speeding system implementation.

The PowerTower is available exclusively through TESSCO. Contact us today via phone, fax, mail or the Internet for more information.

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HEADLINE: Contestant No. 3;
PCS phone firm debuts here today

BYLINE: CHARLES BOISSEAU; Staff

BODY:

For more than a decade, Houston - like other major U.S. cities - has been served by just two cellular telephone suppliers.

Today, the landscape changes as PrimeCo Personal Communications enters Houston and 15 other markets. At least three more wireless companies are expected to join the fray here during the next year.

PrimeCo officials claim their digital phones have several advantages over cellular phones: clearer calls, voice mail and other advanced features, longer battery life, less confusing pricing schemes and lower costs.

But officials with Houston Cellular and GTE Mobilnet - the two established Houston cell phone providers - dispute some of those claims, and say they offer competitive prices and services.

PrimeCo officials say the company's prices are 5 to 10 percent less than comparable offerings from existing cellular companies.

Unlike typical cellular phone plans, PrimeCo will not require an annual contract, though customers must buy a \$ 199 phone.

And, in a promotion that lasts at least until the end of December, PrimeCo is offering free inbound calls for the first minute and free Caller ID service to subscribers.

PrimeCo, based in Dallas, is an alliance formed by three Baby Bell companies - Bell Atlantic, Nynex and U S West - plus AirTouch Communications of Walnut Creek, Calif.

PrimeCo paid \$ 1.1 billion to win the Federal Communications Commission auction for the right to provide "'personal communications services'" in Houston and other markets nationwide. PCS uses a different part of the radio spectrum than existing cellular systems.

The Houston Chronicle, November 13, 1996

In Texas, they've linked up with Texas Utilities Co., the holding company for Dallas' electric utility, which has invested nearly \$ 200 million for a 20 percent stake in PrimeCo's operations in Houston, Dallas-Fort Worth and San Antonio-Austin.

PrimeCo said 15 markets, including Houston, will be turned on today, while Austin will be activated in a few weeks.

PrimeCo has spent \$ 1 billion to build its network, in many cases placing its antennas and base stations on existing transmission towers owned by utility companies to lower costs and speed installation.

More than 70 percent of PrimeCo's 168 antennas in Harris County and seven surrounding counties are located on existing structures, mostly on Houston Lighting & Power transmission towers, said Bob Young, PrimeCo's local vice president and general manager.

This allowed PrimeCo to avoid going through the complete permitting process required by Houston's tower ordinance, which regulates the installation of towers 60 feet or taller, he said.

The company now has 350 Houston employees, including those staffing a customer service center in north Houston, Young said.

PrimeCo is hoping to lure customers by making buying wireless phones and services easier. For example, it will require no annual service contracts, common with cellular phone providers.

Customers also will be able to press a button on their handset to get their current account balance, thus avoiding sticker shock when the bill arrives. And, they can pre-set a spending limit and receive a "'balance alert'" message when their charges reach 80 percent of that amount during the month.

"'It takes the guesswork out of monthly wireless bills and will entice more customers who have been holding back,'" Ben Scott, president and chief executive of PrimeCo, told reporters.

PrimeCo is selling its phones and services through company-owned retail locations - including five in the Houston area - and through retailers, including Best Buy, Circuit City, Computer City, Incredible Universe, Office Depot and Radio Shack.

In addition to \$ 199 for its digital phone - manufactured by a joint venture between San Diego-based Qualcomm and Sony Corp. - customers will pay \$ 30 a month and then 25 cents a minute for in-state calls and 44 cents a minute for out-of-state calls.

The Houston Chronicle, November 13, 1996

Another option provides 100 minutes of free talk time for those paying \$ 50 a month.

Comparison shopping is difficult, however, since cellular providers offer a dizzying array of calling plans and prices.

For example, Houston Cellular offers plans that start at \$ 31.99 a month, with calls free for 30 minutes and 44 cents a minute thereafter. It also offers a plan for \$ 269.99 per month, with 1,079 minutes of free calls per month, and per-minute charges after that, said Irvin Smith, a sales associate at Ritz Camera. Ritz, one of Houston Cellular's dealers, has a location directly next door to PrimeCo's new store in the Galleria area.

While existing cellular phone users often get a "'free'" or very low-cost phone when they sign a service contract of a year or more, Scott of PrimeCo said "'free'" is misleading. "'Consumers understand that is a built-in cost,'" requiring an annual contract and a penalty for dropping early, he said.

Scott noted that the higher price for PCS handsets in markets such as Washington, D.C., where Sprint's new PCS operation has signed up far more subscribers than analysts had projected, "'has not been an obstacle. '" Existing cellular companies had a response for most of the advantages touted by PrimeCo. Both GTE and Houston Cellular said they now also offer no-service-contract subscription plans for customers paying up to \$ 199 for their phones.

They also point out that PrimeCo offers a far more limited coverage area than their networks, which allow cellular users to make calls almost everywhere nationwide.

Moreover, Houston Cellular, owned by AT&T Corp. and BellSouth, last month rolled out its own digital network with many of the same features as PrimeCo's, such as numeric paging, caller ID and voice-mail alert capability, said spokeswoman Peggy Mahoney.

A spokeswoman for GTE Mobilnet said it has yet to implement a digital network in Houston that would allow for such features, and could not say when it would.

Finally, Mahoney noted, PrimeCo is using an unproven technology.

PrimeCo's rollout - closely watched within the industry - marks the largest introduction of Qualcomm's code-division multiple-access technology, or CDMA, a new way of digitally coding messages over radio waves.

Walter Piecyk, wireless analyst with PaineWebber, said a huge marketing war between cellular companies and PCS firms is just getting under way, which will mean greatly lower prices the

The Houston Chronicle, November 13, 1996

next few years.

"It's good news for the consumer," he said.

Each of them has differentiating features now, so they don't necessarily need to compete on price, he said. But eventually the differences will blur, and then "price does become an issue."

PrimeCo is the first to enter what is expected to be a crowded wireless phone market in Houston.

Early next year, Chicago-based American Portable Telecom plans to launch PCS service here using a different technology. On Tuesday, the company announced it changed the brand name to Aerial Communications, a moniker it will phase in the rest of the year.

Another player, NextWave Communications, says it plans to launch wireless phone service in Houston and four other markets by the second half of 1997.

Finally, Nextel Communications, a mobile radio company, is expected to offer in Houston next year two-way digital paging and limited wireless phone service, designed for use by businesses, such as dispatching firms, Piecyk said.

"This is going to be a real marketing battle," agreed Tim Ayers, spokesman for the Cellular Telecommunications Industry Association in Washington, which represents cellular and PCS companies.

"Prices will clearly come down, and already the market has switched from being a business product to being a personal product, a consumer product," Ayers said.

"You're going to see a busy Christmas season for wireless phones," he predicted.

With more competitors and lower and lower prices, Piecyk forecasts a near doubling of the number of U.S. wireless phone subscribers, from 44 million at the end of 1996 to 85 million by the end of 2000.

"Five to 10 years from now it really becomes a replacement for the home phone," he said.

GRAPHIC: Photo: Primeco General Manager Robert Young displays the company's wireless telephone (color); John Everett / Chronicle

LANGUAGE: ENGLISH